REMARKS

Claims 23-33 are pending in this application. By this Amendment, claims 25 and 33 are amended. The amendments are non-narrowing in scope and are not related to reasons of patentability. Claim 23 is the sole independent claim.

Allowable Subject Matter

Applicants appreciate the indication that claims 25-33 would be allowable if rewritten to overcome the objection under 35 U.S.C. §112, second paragraph, and to include all of the features of the base claims and any intervening claims. However, Applicants submit that claims 23 and 24 are also allowable in view of the foregoing amendment and following remarks.

Objection to the Specification

The Examiner objected to the specification due to minor informalities. The specification has been amended to obviate the objection. Accordingly, it is respectfully submitted that the objection be withdrawn.

Claim Rejections - 35 U.S.C. § 112

The Office Actions rejects claims 23-32 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

With regard to claim 23, the Examiner asserts that claim 23 is incomplete for omitting a central structural cooperative relationship between elements (e.g., heating apparatus, applicator, deflector, wave guide and resonant cavity). Applicants submit that the necessary structural cooperative relationship of elements are adequately recited in claim 23. Further,

MPEP 2172.01 states that "it is not essential to a patentable combination that there be interdependency between the elements of the claimed device or that all the elements operate concurrently toward the desired result", *Ex parte Nolden,* 149 USPQ 378, 380 (Bd. Pat. App. 1965). Accordingly, Applicants submit claim 23 provides a complete structural cooperative relationship between all elements, and does not amount to a gap between the structural connections. Withdrawal of the rejection is respectfully requested.

With regard to lines 3, 5 and 12, Applicants have amended claim 25 as suggested by the Examiner.

With regard to claim 33, Applicants have amended claim 33 as suggested by the Examiner.

Reconsideration and withdrawal of the rejections under 35 U.S.C. § 112 are respectfully requested.

Claim Rejection - 35 U.S.C. § 102

Claims 22 and 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by Minakawa et al. (hereinafter "Minakawa") EP 0552807A1. The rejection is respectfully traversed.

Example Embodiments of the Present Inventions

Example embodiments of the present invention are directed to a method for heating a sample, such as chemical reaction mixtures, whose dielectric properties vary during the heating process. As shown in an example embodiment of the present invention, Fig. 1 illustrates a microwave heating apparatus comprising a microwave generator 2, an applicator 4 and a dummy load 5, and a waveguide 3 forming two arms for guiding the radiation from the generator 2 to the applicator 4. In a further example embodiment of the present invention,

a deflector 26 is positioned in the waveguide 3 near the applicator 4 to optimize the amount of absorbed power and obtain better control of the sample heating process.

The deflector 26 in accordance with an example embodiment of the present invention may be rotated in order to adjust resonant conditions and coupling factors in response to the dielectric properties of the sample. In other words, the deflector forms a resonant cavity with the wave guide applicator (with sample) so as to affect the electrical distance for at least part of the electromagnetic wave guided to the applicator and to virtually change the effective length of the cavity. Because the resonant of the cavity may change when the permittivity of the sample varies, the deflector 26 may compensate for the change, and thus keep the resonant frequency substantially constant and provide a high microwave heating efficiency.

Minakawa fails to disclose or suggest, *inter alia*, "rotating a deflector for adjusting a coupling factor between a waveguide and a resonant cavity", as recited in claim 23.

Minakawa merely discloses a microwave oven having a heating chamber 1, a wave guide 2 for guiding the microwave generated by the magnetron 3 into the heating chamber, and a metal reflector 9 for adjusting the impedance of a load at the side of the heating chamber via its rotation angle (Abstract). That is, Minakawa discloses rotating the metal deflector 9 to adjust the impedance of a load, rather than adjusting a coupling factor between a wave guide and a resonant cavity, as recited in claim 23.

Further, Minakawa is completely silent with regard to the resonant cavity. Applicants have read Minakawa in its entirety several times and cannot find anywhere in the disclosure of Minakawa that teaches or discloses the feature of the resonant cavity. In fact, Minakawa cannot teach the use of resonant cavity because the rotation of the metal deflector 9 of Minakawa is not based on the resonance conditions and the coupling factors of radiation.

Further, Minikawa is non-analogous art. Minakawa discloses determining impedance

in a heating chamber depending upon the magnitude of load and position of the food item in a microwave oven. Rather, in an example embodiment, the present invention discloses a microwave heating apparatus for chemical reaction mixtures having a resonant cavity in which the resonance conditions and the coupling factors of radiation are adjustable.

Accordingly, Minakawa fails to disclose or suggest "rotating a deflector for adjusting a coupling factor between a wave guide and a resonant cavity", as recited in claim 23.

Accordingly, Applicants respectfully submit that independent claim 23 is patentable over Minakawa for at least these reasons. Applicants further submit that dependent claim 24 is allowable by virtue of its dependency on allowable independent claim 23, for at least the reasons set forth above. Withdrawal of the rejection is respectfully requested.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration for the objections and rejections and allowance of each of claims 23-33 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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